GENERAL NOTES

I. GENERAL

A. CODES AND STANDARDS

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE "BUILDING CODE OF THE CITY OF NEW YORK", MOST RECENT EDITION, AND WITH THE REGULATIONS OF ALL GOVERNMENTAL AGENCIES WHICH WOULD HAVE JURISDICTION IF THE PANYNJ WERE A PRIVATE CORPORATION.

2. WHERE MORE STRINGENT, THE FOLLOWING CODES, STANDARDS AND SPECIFICATIONS, LATEST EDITION AND REVISION, SHALL APPLY TO THE WORK ALL AS MODIFIED HEREIN OR BY BUILDING CODE:

a) *LOAD AND RESISTANCE FACTOR DESIGN SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS*, BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (*AISC SPECIFICATION*).

b) *CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES*, PUBLISHED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC CODE). SECTIONS 6, 7, 8 AND 10, ONLY, SHALL APPLY TO THE WORK, EXCEPT AS MODIFIED IN THIS SPECIFICATION; THE REMAINDER BEING SPECIFICALLY EXCLUDED.

c) *STRUCTURAL WELDING CODE - STEEL*, ANSI/AWS D1.1 (AWS D1.1).

d) *STRUCTURAL WELDING CODE - SHEET STEEL*, ANSI/AWS D1.3 (AWS D1.3).

e) *SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS*, ACCEPTED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION, PUBLISHED BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.

f) *SYMBOLS FOR WELDING AND NONDESTRUCTIVE TESTING*, AWS A2.4.

g) *STRUCTURAL WELDING CODE - REINFORCING STEEL*, AWS D1.4 (AWS D1.4).

h) *SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS*, BY THE AMERICAN IRON AND STEEL INSTITUTE.

i) ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318.

j) ACI "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT", ACI 315.

3. REFERENCE DOCUMENTS: TO THE EXTENT THAT THE BEST QUALITY OF WORK IS PROVIDED, WORK SHALL CONFORM TO THE EXAMPLES, PROCEDURES AND RECOMMENDATIONS LISTED BELOW, LATEST EDITION AND REVISION, WHERE PROVISIONS OF THE *BUILDING CODE*, THESE CONTRACT DRAWINGS, OR CODES, STANDARDS AND CITED SPECIFICATIONS ARE MORE RESTRICTIVE OR PROVIDE INCREASED QUALITY. THE COMBINATION OF PROVISIONS, EXAMPLES, PROCEDURES AND RECOMMENDATIONS WHICH PROVIDE BOTH BEST QUALITY AND *BUILDING CODE* CONFORMANCE SHALL CONTROL THE WORK.

a) *MANUAL OF STEEL CONSTRUCTION, LRFD*, FIRST EDITION, BY AMERICAN INSTITUTE OF STEEL CONSTRUCTION (*AISC MANUAL*). CONTRACTOR SHALL KEEP AT LEAST ONE FULL COPY IN THE FIELD OFFICE AT ALL TIMES.

b) *DETAILING FOR STEEL CONSTRUCTION*, BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.

c) SSPC *STEEL STRUCTURES PAINTING MANUAL, VOLUME 1, AND VOLUME 2*, BY STEEL STRUCTURES PAINTING COUNCIL.

B. SITE CONDITIONS

1. DIMENSIONS AND DETAILS SHOWN IN STRUCTURAL DRAWINGS ARE TAKEN FROM THE ORIGINAL DESIGN DOCUMENTS AND MAY NOT ACCURATELY REPRESENT CURRENT EXISTING CONDITIONS. THE CONTRACTOR SHALL VERIFY ALL INFORMATION PERTAINING TO EXISTING CONDITIONS BY INSPECTION AND MEASUREMENT AT THE CONSTRUCTION SITE PRIOR TO THE COMMENCEMENT OF ANY WORK.

2. IT IS INTENDED THAT ALL MEMBERS BE FABRICATED AND ERECTED FREE OF SHOP AND FIELD SPLICES WHICH ARE NOT SPECIFICALLY SHOWN IN THE CONTRACT DRAWINGS. IF FIELD CONDITIONS NECESSITATE FIELD SPLICING OF MEMBERS, SUBMIT SPLICE LOCATIONS FOR ENGINEER'S ACCEPTANCE. WHERE FIELD SPLICING IS ACCEPTED, SPLICES SHALL BE SHOWN IN THE SHOP DRAWINGS OR IN FIELD WORK DRAWINGS.

3. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CORRECTNESS OF DIMENSIONS AND QUANTITIES AND FOR THE FITTING TO OTHER WORK; FOR WORK TO BE CONFIRMED AND CORRELATED AT THE SITE; FOR INFORMATION PERTAINING TO THE FABRICATION PROCESSES OR TO THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION; AND FOR THE COORDINATION OF THE WORK OF THIS SECTION WITH THE WORK OF ALL OTHER TRADES. THE VERIFICATION OF THE PHYSICAL INTERRELATIONSHIPS OF ELEMENTS OF THE WORK FROM PLANS AND SPECIFICATIONS, AND IN THE FIELD IS THE CONTRACTOR'S SOLE RESPONSIBILITY. THE ENGINEER'S REVIEW OF CONTRACTOR'S SUBMISSIONS DOES NOT RELIEVE CONTRACTOR FROM THESE RESPONSIBILITIES.

4. SPRAYED FIREPROOFING: REMOVE SPRAYED FIREPROOFING AS REQUIRED. UNLESS OTHERWISE SHOWN OR NOTED IN THE CONTRACT DRAWINGS, APPLY SPRAYED FIREPROOFING TO ALL ADDED STEEL, TO ALL EXISTING STEEL WHERE SPRAYED FIREPROOFING IS DAMAGED OR REMOVED IN THE EXECUTION OF THIS CONTRACT, AND AS DIRECTED BY THE ENGINEER. SPRAYED FIREPROOFING SHALL BE MONOKOTE BY W.R. GRACE COMPANY APPLIED TO ACHIEVE A MINIMUM 2-HOUR FIRE-RATING.

5. HOLES SHALL NOT BE CUT OR DRILLED INTO EXISTING STRUCTURAL MEMBERS WITHOUT THE APPROVAL OF THE PANYNJ.

C. SHOP DRAWINGS

1. ONLY SHOP DRAWINGS MARKED "NO EXCEPTIONS TAKEN" OR "MAKE CORRECTIONS NOTED - RESUBMISSION NOT REQUIRED" MAY BE USED BY THE CONTRACTOR IN THE WORK. SHOP DRAWINGS MARKED "MAKE CORRECTIONS NOTED - RESUBMIT" SHALL BE CORRECTED AND/OR COMPLETED AS REQUIRED AND SHALL BE RESTRICTED TO THE ENGINEER. THIS PROCESS SHALL BE REPEATED THE NUMBER OF TIMES REQUIRED TO ACHIEVE THE MARK "NO EXCEPTION TAKEN" OR "MAKE CORRECTIONS NOTED - RESUBMISSION NOT REQUIRED".

2. THE CONTRACTOR SHALL NOTE THAT THE ENGINEER'S REVIEW OF SHOP DRAWINGS IS ONLY FOR CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND FOR INFORMATION GIVEN IN THE CONTRACT DRAWINGS AND SPECIFICATIONS. NONCONFORMITIES AND ERRORS DETECTED DURING THE REVIEW WILL BE NOTED ON THE SHOP DRAWINGS AND RETURNED TO THE CONTRACTOR UPON COMPLETION OF THE REVIEW. THE ENGINEER IS NOT RESPONSIBLE FOR THE COMPLETENESS OR ACCURACY OF THE CONTRACTOR'S SHOP DRAWINGS. ACCEPTANCE OF SHOP DRAWINGS, INCLUDING DEVIATIONS NOT DETECTED DURING THE REVIEW, WILL NOT RELIEVE THE CONTRACTOR FROM THE SOLE RESPONSIBILITY TO PROVIDE WORK CONFORMING STRICTLY TO THE CONTRACT DOCUMENTS. SHOP DRAWING REVIEW EXCLUDES ENGINEERING CALCULATIONS TO THE EXTENT NECESSARY TO ASCERTAIN THAT THE CONTRACTOR'S CALCULATIONS HAVE BEEN COMPETENTLY PREPARED.

ENGINEERING CALCULATIONS PERFORMED BY ENGINEER AND PROVIDED TO CONTRACTOR MAY BE REPRESENTATIVE OF MANY SIMILAR CONDITIONS AND SHOULD NOT BE CONSTRUED BY CONTRACTOR AS APPLYING TO ONE DETAIL OR ONE CONDITION ONLY.

3. SHOULD ENGINEER'S MARKS OR CORRECTIONS BE MADE IN ANY SHOP DRAWING THAT WOULD OR COULD RESULT IN INCORRECT FIT OF ANY PART OR RESULT IN INSUFFICIENT STRENGTH OR STABILITY OF THE WORK, CONTRACTOR SHALL SO NOTIFY IN WRITING SO AS TO EXPEDITE THE REQUIRED CORRECTION OR MODIFICATION. FAILURE BY CONTRACTOR TO PROVIDE PROMPT AND IMMEDIATE NOTIFICATION SHALL RESULT IN RESPONSIBILITY FOR THE INCORRECT MARK OR CORRECTION RESTING SOLELY WITH CONTRACTOR.

4. RESUBMISSION OF SHOP DRAWINGS: PRIOR TO RESUBMISSION OF SHOP DRAWINGS WITH ADDITIONS, DELETIONS, OR CORRECTIONS, CONTRACTOR SHALL CIRCLE AND IDENTIFY ALL CHANGES FROM THE PRIOR ISSUE. SHOP DRAWINGS SUBMITTED WITHOUT EACH CHANGE BOTH CIRCLED AND CLEARLY IDENTIFIED WILL BE RETURNED FOR RESUBMISSION.

II. REMOVAL

A. PROVIDE AND PLACE BRACING AND SHORING AS NEEDED. SUPPORT STRUCTURE TO REMAIN AS NECESSARY TO PREVENT DAMAGE OR UNACCEPTABLE DEFLECTION. KEEP ALL BRACING AND SHORING IN PLACE DURING NEW STRUCTURAL STEEL AND CONCRETE CONSTRUCTION AND UNTIL NEW CONCRETE ACHIEVES 80 PERCENT OF DESIGN STRENGTH.

B. SAWCUT AND REMOVE CONCRETE TO TRUE SMOOTH LINES TO THE EXTENT SHOWN IN THE CONTRACT DRAWINGS AFTER INSTALLATION OF ALL ADDED BEAMS AND REINFORCEMENTS, WITHOUT DAMAGE TO EXISTING REINFORCING STEEL DESIGNATED TO REMAIN. JOINTS BETWEEN EXISTING CONCRETE AND NEW CONCRETE SLAB CONSTRUCTION SHALL BE LEFT CLEAN, ROUGH, AND ESSENTIALLY VERTICAL.

C. ALL STEEL BEAM CUTS SHALL BE NEAT, SMOOTH, AND TRUE TO LINE. REPAIR EXCESS GAS BURNING SERRATIONS AND GOUGES BY NECESSARY WELDING AND GRINDING.

III. STRUCTURAL STEEL

A. GENERAL

1. UNLESS NOTED OTHERWISE:

STRUCTURAL STEEL SHALL BE FY 36. WHERE NOTED OTHERWISE, PROVIDE THE INDICATED YIELD STRESS (I.E., FY 50 IMPLIES A YIELD STRESS OF 50 KSI) OF THE ASTM GRADE SELECTED FROM STEELS PERMITTED BY THE SPECIFICATIONS.

ALL CONNECTION PLATES AND ANGLES SHALL BE FY 36 UNLESS NOTED OTHERWISE.

PIPES SHALL BE FY 36 (ASTM A501).
TUBES SHALL BE FY 46 (ASTM A500).

2. UNLESS SPECIFICALLY NOTED TO THE CONTRARY, ALL BOLTED CONNECTIONS SHALL BE MADE WITH SLIP-CRITICAL, A325 OR A490 BOLTS. THE MINIMUM NUMBER OF ROWS OF BOLTS FOR FRAMED CONNECTIONS SHALL BE BASED ON BEAM DEPTH AS TABULATED IN THE TABLE BELOW. WHERE NO REACTION IS PROVIDED IN THE CONTRACT DRAWINGS, OR UNLESS NOTED OTHERWISE, THE CONNECTION SHALL BE PROPORTIONED TO CARRY THE VERTICAL REACTION LISTED IN THE TABLE BELOW:

MINIMUM CONNECTION REQUIREMENTS

NOMINAL DEPTH OF BEAM OR GIRDER	MINIMUM NUMBER OF ROWS OF BOLTS	MINIMUM FACTORED VERTICAL REACTION (KIPS)	
		CONNECTED TO BEAM OR GIRDER	CONNECTED TO COLUMN
8	2	14	24
10	2	17	24
12	2	20	36
14, 15, 16	3	36	49
18	3	49	76
21, 24	4	62	91
27, 30	5	74	101
33, 36	6	85	123

BOLTS ARE LIMITED TO THE FOLLOWING DIAMETERS AND GRADES AND MAY BE SHOWN IN THE CONTRACT DRAWINGS IN AN ABBREVIATED FORM:

	ABBREVIATED	
3/4" - A325 SC	3/4" O	
7/8" - A325 SC	7/8" O	
1" - A325 SC	1" O	
1 1/8" - A490 SC	1 1/8" O	

3. ALL FORCES SHOWN IN STRUCTURAL DRAWINGS AND DETAILS ARE FACTORED FORCES, UNLESS OTHERWISE NOTED.

4. END REACTIONS AND/OR DETAILS ARE SHOWN THUS:

Vu, Hu — INDICATES CONNECTION DETAILS PROPORTIONED FOR THE GIVEN REACTIONS. Vu = VERTICAL REACTION AND Hu = HORIZONTAL REACTION (AXIAL LOAD IN BEAMS) IN KIPS. WHERE ONLY ONE VALUE IS GIVEN, Hu = 0.

Vu, Hu / Mu — or — Vu, Hu/Mu — INDICATES A MOMENT CONNECTION. THE FULL MOMENT CAPACITY OF THE BEAM SHALL BE DEVELOPED UNLESS OTHERWISE NOTED.

Vu, Hu/Mu C/S2-05 — INDICATES A PERTINENT DETAIL AS SHOWN IN DRAWING S2-05 OF THIS DOCUMENT. WHERE REACTIONS ARE INDICATED, THE CONNECTION SHALL BE PROPORTIONED AS PROVIDED ABOVE.

5. AT CONTRACTOR'S OPTION, CONNECTIONS MAY BE PROPORTIONED BASED ON THE *AISC SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS - ALLOWABLE STRESS DESIGN*, 9TH EDITION (ASD). END REACTIONS FOR ASD DESIGN SHALL BE 0.75 TIMES THE FACTORED REACTIONS GIVEN IN THE DRAWINGS. DUE TO VARIATIONS IN LOAD FACTORS, THIS 0.75 FACTOR IS CONSERVATIVE IN SOME CASES; THEREFORE, SOME CONNECTIONS PROPORTIONED PER ASD MAY BE MORE CONSERVATIVE THAN IF PROPORTIONED PER LRFD.

6. REINFORCING SHALL BE PROVIDED TO BEAMS AT CONNECTIONS WHERE CUTS HAVE REDUCED THE SHEAR OR MOMENT CAPACITY BELOW THAT REQUIRED TO SUSTAIN THE REACTIONS. FLANGES AND WEBS SHALL BE REINFORCED WHERE THE LOCAL CAPACITY TO SUSTAIN CONNECTION LOADS IS INADEQUATE.

7. ELECTRODES, FLUX AND SHIELDING GAS SHALL PROVIDE PHYSICAL PROPERTIES AFTER WELDING EQUIVALENT TO OR BETTER THAN E7018 LOW HYDROGEN ELECTRODES.

8. CAMBER WHERE REQUIRED IS INDICATED BY "C" IN PLANS, FOLLOWED BY THE ORDINATE, IN INCHES. WHERE NO CAMBER IS INDICATED, MEMBERS SHALL BE FABRICATED AND PLACED WITH NATURAL CAMBER UP.

9. PROVIDE 5/16 INCH THICK OR THICKER SHELF ANGLES AT COLUMNS, WALLS AND BEAMS AS REQUIRED TO PROVIDE END AND SIDE BECK SUPPORTS.

10. DOUBLE ANGLE MEMBERS SHALL BE CONNECTED IN ACCORDANCE WITH THE PROVISIONS OF AISC SECTION E4.

11. FILLET WELDS ON GUSSET PLATES, SEATED CONNECTIONS AND OTHER PLATE EXTENSIONS SHALL BE RETURNED AROUND THE ENDS OF THE PLATE FOR PLATES EXPOSED TO WEATHER.

12. ERECTION AIDS AND DEVICES ARE NOT SHOWN HEREIN. THE DETAILING OF THESE DEVICES IS THE RESPONSIBILITY OF CONTRACTOR.

B. SHOP DRAWINGS

1. GENERAL: SHOP DRAWINGS, ARE NOT CONTRACT DOCUMENTS, BUT ARE INTENDED TO DEMONSTRATE THE WAY THAT CONTRACTOR INTENDS TO CONFORM TO THE REQUIREMENTS PROVIDED IN THE CONTRACT DRAWINGS AND SPECIFICATIONS. CONTRACTOR MAY WISH TO USE THESE SAME DRAWINGS AS A PART OF THE INSTRUCTIONS GIVEN TO CRAFTPERSONS FOR THE ACCOMPLISHMENT OF THE WORK.

2. ERECTION DRAWINGS SHALL SHOW CLEARLY THE SIZE, GRADE AND LOCATION, BOTH IN PLAN AND IN ELEVATION, OF EACH MEMBER. TO THE EXTENT DESIRED BY CONTRACTOR, THE STRUCTURAL DRAWINGS MAY BE USED FOR THIS PURPOSE. IN ADDITION TO BASIC INFORMATION GIVEN IN THE STRUCTURAL DRAWINGS, ERECTION DRAWINGS SHALL CONTAIN (FOR EACH PIECE) THE ERECTION MARK, THE LOCATION, SIZE AND REINFORCING OF BEAM PENETRATIONS, THE ELEVATION OF TOP OF BEAM, (WHERE SLOPED) THE ELEVATION OF THE WORK POINT OF BOTH ENDS, AND CAMBER.

ADDITIONALLY:

a) SHOW EACH FIELD CONNECTION COMPLETE WITH DATA AND DETAILS NECESSARY FOR ASSEMBLING THE STRUCTURE. DIRECT SPECIAL ATTENTION TO THE POSSIBLE NEED FOR SPECIAL GUYING, BRACING OR SHORING TO PREVENT DEFORMATION OF EXISTING OR NEW STRUCTURE DUE TO STRESSES CAUSED BY ERECTION PROCEDURES AND EQUIPMENT, BY CONSTRUCTION LOADINGS AND BY FORCES IMPOSED BY NATURAL PHENOMENA.

3. SHOP DRAWINGS SHALL INCLUDE PLANS, ELEVATIONS, SECTIONS AND COMPLETE DETAILS TO DESCRIBE CLEARLY, AT AN ADEQUATE SCALE, ALL WORK TO BE PROVIDED. SHOP DRAWINGS SHALL BE ACCURATELY DIMENSIONED AND SHALL BE NOTATED CLEARLY.

4. SIZE AND GRADE OF STEEL FOR EACH COMPONENT PART OF THE STRUCTURE SHALL BE INDICATED CLEARLY IN SHOP DRAWINGS. ROLLED SHAPES, TUBES, PLATES AND OTHER COMPONENTS SHALL BE IDENTIFIED BY USING THE STANDARD DESIGNATIONS USED IN AISC'S *DETAILING FOR STEEL CONSTRUCTION*.

5. SYMBOLS: WELDS AND NONDESTRUCTIVE TESTS SHALL BE INDICATED BY USING THE SYMBOLS CONFORMING TO AWS A2.4, *SYMBOLS FOR WELDING AND NONDESTRUCTIVE TESTING*. WHERE NECESSARY FOR CLARITY, INDICATE WELDING PROCESS DESIGNATION OR OTHER DATA IN THE TAIL OF THE WELDING SYMBOL.

6. DETAIL IN ACCORD WITH AND TO ACCOMMODATE CONTRACTOR'S FIELD MEASUREMENTS OF SUPPORTING AND ADJOINING CONSTRUCTION. DO NOT FABRICATE BEFORE ACCEPTED SHOP DRAWINGS HAVE BEEN RETURNED TO CONTRACTOR.

7. INDICATE CLEARLY THE GRADE, SIZE AND NUMBER OF BOLTS, THE TYPE, NUMBER, POSITION, DESIGNATION AND ORIENTATION OF EACH WASHER, THE BOLT TENSION INDICATING SYSTEM AND THE SIZE OF EACH HOLE, WHETHER SLOTTED OR ROUND. PROPORTION CONNECTION DETAILS TO ENSURE ADEQUATE WRENCH CLEARANCE FOR CORRECT BOLT TENSIONING SEQUENCES.

8. ASTM A490 BOLTS MAY BE USED IN SLIP CRITICAL CONNECTIONS ONLY, NOT RELYING ON THE BEARING CAPACITY OF THE CONNECTION AND NOT TO CARRY DIRECT TENSILE LOADS.

9. REVIEW OF SHOP DRAWINGS WILL INCLUDE THE FOLLOWING:

a) MEMBER SIZE, GRADE, SPACING AND ELEVATION.

b) STRUCTURAL INTEGRITY OF CONNECTIONS.

c) PENETRATIONS, INCLUDING SIZE, AND LOCATION.

10. TEMPORARY, SHIPPING, HANDLING OR ERECTION LOADINGS WILL NOT BE CONSIDERED IN THIS REVIEW.

11. TEMPORARY WORK: DEPICT AND IDENTIFY TEMPORARY MEMBERS AND CONNECTIONS WHICH MAY BE REQUIRED FOR TEMPORARY CONSTRUCTION, ERECTION AND THE LIKE.

C. MILL TEST REPORTS:

1. SUBMIT CERTIFIED COPIES OF MILL TEST REPORTS FOR ALL STEEL FURNISHED. COMPLY WITH ALL APPLICABLE PARTS OF ASTM SPECIFICATIONS. BEYOND ORDERING INFORMATION NORMALLY PROVIDED BY CONTRACTOR, THE MILL SHALL BE INSTRUCTED TO COLOR-CODE IN ACCORDANCE WITH ASTM A6, AND TO MARK WITH HEAT NUMBER, SIZE, AND TYPE AND GRADE OF STEEL.

2. SUBMIT MANUFACTURER'S CERTIFICATION OF BOLTS, NUTS, WASHERS, DTI'S AND THE LIKE FOR EACH PRODUCTION OF EACH GRADE OF EACH TYPE AND EACH SIZE OF FASTENER COMPONENT AND FILLER MATERIAL FOR WELDING.

3. MILL TEST REPORTS SHALL STATE CLEARLY THE GOVERNING ASTM SPECIFICATION AND SHALL BE CERTIFIED AND NOTARIZED BY CONTRACTOR AS CONFORMING IN ALL RESPECTS TO THAT SPECIFICATION.

4. MATERIAL PROVIDED IN ACCORD WITH THE ABOVE REQUIREMENTS MAY BE USED IN THE WORK WITHOUT FURTHER LOCAL TESTS. IN CASE OF CONTROVERSY, CONTRACTOR SHALL PERFORM TENSION, BEND AND SUCH OTHER TESTS AS ARE REQUIRED TO DEMONSTRATE COMPLIANCE WITH THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS.

5. TESTS FOR UNIDENTIFIED STEEL: IN THE EVENT THAT STEEL CANNOT BE IDENTIFIED BY HEAT OR MELT NUMBERS BUT IS ACCOMPANIED BY MILL ANALYSIS AND TEST REPORTS, SUCH STOCK MAY BE USED PROVIDED THAT ONE TENSION AND ONE BEND TEST IS MADE FOR EACH THIRTY TONS (33 TONNES) OR FRACTION THEREOF. COMPLETE, SIX-SIDED SURFACE INSPECTION SHALL BE PERFORMED FOR SUCH MATERIALS. EACH PIECE OF STEEL NOT OF GRADE FY 36 SHALL BE TESTED AND STAMPED.

6. ALL STEEL THAT IS NOT PROPERLY IDENTIFIED OR WHOSE SOURCE IS SUBJECT TO QUESTION SHALL BE REJECTED.

7. STEEL PIPE AND TUBING SHALL HAVE NOT LESS THAN ONE TENSION, ONE BEND, AND ONE FLATTENING TEST FOR EACH ONE HUNDRED LENGTHS OR FRACTION THEREOF, FOR EACH SIZE, FOR EACH WALL THICKNESS AND FOR EACH GRADE. BOTH TENSION AND BEND TESTS SHALL BE MADE FROM COUPONS TAKEN LONGITUDINALLY.

D. NAMES OF MANUFACTURERS/SUPPLIERS: SUBMIT FOR ACCEPTANCE THE NAMES OF THE FOLLOWING PRODUCTS AND/OR PRODUCERS ALONG WITH CERTIFICATION THAT THE PRODUCTS CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS:

1. PLATES AND SHAPES
2. BOLTS, NUTS AND WASHERS
3. SHOP AND FIELD PAINT
4. COATING OF MILLED SURFACES
5. WELDING MATERIALS
6. STUD SHEAR CONNECTORS
7. DEFORMED ANCHOR BARS
8. SHIELDING GAS

E. CERTIFICATION OF SHIELDING GAS: SUBMIT CERTIFICATION THAT SHIELDING GAS IS A WELDABLE GRADE HAVING A DEW POINT OF -40°F (-40°C) OR LOWER.

F. MATERIAL IDENTIFICATION: ON COMPLETION OF THE WORK, CONTRACTOR SHALL SUBMIT AN AFFIDAVIT, COUNTERSIGNED BY THE APPROPRIATE SUBCONTRACTOR(S), ATTESTING THAT ALL MATERIALS AND PRODUCTS PROVIDED FOR THE WORK CONFORM TO THE APPLICABLE SPECIFICATIONS, STANDARDS, YIELD POINTS, GRADES AND THE LIKE REQUIRED BY THE CONTRACT DOCUMENTS.

G. MEASUREMENTS

1. FIELD MEASUREMENTS: OBTAIN ALL FIELD MEASUREMENTS REQUIRED FOR PROPER FABRICATION AND INSTALLATION OF WORK. SUBMIT, PRIOR TO INSTALLATION, ALL MEASUREMENTS INDICATING DISCREPANCIES FROM THE DRAWINGS. DESCRIBE IN WRITING AND, WHERE APPLICABLE, BY SKETCHES PROPOSED METHODS OF CORRECTING DISCREPANCIES. MEASUREMENTS ARE THE RESPONSIBILITY OF CONTRACTOR.

2. LAY OUT EACH PART OF THE WORK IN STRICT ACCORDANCE WITH THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING AND ALL OTHER DRAWINGS AND BE RESPONSIBLE FOR CORRECT LOCATION OF SAME. LAY OUT FROM AT LEAST TWO PRE-ESTABLISHED BENCHMARKS AND AXIS LINES, INDIVIDUALLY CORRECT FOR LENGTH AND BEARING.

3. TEMPLATES: FURNISH TEMPLATES AND LAYOUT DRAWINGS FOR EXACT LOCATIONS OF ITEMS TO BE EMBEDDED IN CONCRETE, WITH SETTING INSTRUCTIONS REQUIRED FOR INSTALLATION OF EMBEDDED ITEMS.

H. TESTING AND INSPECTION:

1. THE TESTING ACTIVITIES ARE ONLY FOR THE LIMITED PURPOSE OF EXAMINING CONTRACTOR'S QUALITY ASSURANCE PROGRAM FOR CONFORMANCE WITH THE INTENT OF THE CONTRACT DRAWINGS AND SPECIFICATIONS. CONTRACTOR, ALONE, IS RESPONSIBLE FOR THE ACHIEVING OF THE REQUIRED LEVEL OF QUALITY, BOTH IN THE SHOP AND IN THE FIELD.

2. TESTING PERSONNEL MAY SAMPLE MATERIALS TAKEN FROM THE AS-ERECTED WORK.

a) HIGH-TENSILE BOLTS, NUTS AND WASHERS, OF EACH SIZE AND GRADE, MAY BE SAMPLED AND TESTED IN ACCORD WITH ASTM PROCEDURES.

b) COUPONS MAY BE TAKEN FROM STRUCTURAL STEEL SHAPES AND PLATES AND WELDS AND TESTED IN ACCORD WITH ASTM PROCEDURES.

3. RESPONSIBILITIES AND DUTIES OF TESTING PERSONNEL: TESTING PERSONNEL WILL INSPECT ALL SHOP AND FIELD WELDING, AND HIGH-STRENGTH BOLTING IN ACCORD WITH THE PROVISIONS OF THIS SPECIFICATION.

a) BOTH TESTS AND INSPECTIONS WILL COMPLY WITH THE REQUIREMENTS OF THE *BUILDING CODE*, AS AMENDED BY THE REQUIREMENTS AND REGULATIONS OF THE BUILDING DEPARTMENT AND AS SPECIFIED HEREIN.

b) TESTING PERSONNEL, UPON THE COMPLETION OF THE WORK, WILL BE REQUIRED TO CERTIFY IN WRITING THAT THE WELDING AND THE HIGH-STRENGTH BOLTING HAS BEEN PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF THE CONTRACT DRAWINGS AND SPECIFICATION.

c) TESTING AND REPORTING WILL BE PERFORMED IN ACCORD WITH THE FOLLOWING REQUIREMENTS:

i) TESTING WILL BE PERFORMED IN ACCORD WITH THE PROVISIONS OF ASTM A370, *STANDARD METHODS AND DEFINITIONS FOR MECHANICAL TESTING OF STEEL PRODUCTS*.

ii) DYE PENETRANT TESTING WILL CONFORM TO THE PROVISIONS OF ASTM E165 AND AWS D1.1.

iii) MAGNETIC PARTICLE INSPECTION WILL CONFORM TO THE PROVISIONS OF ASTM E109 AND AWS D1.1.

iv) ULTRASONIC, X-RAY AND GAMMA RAY TESTING WILL CONFORM TO THE PROVISIONS OF AWS D1.1, CHAPTER 6.

d) TEST SPECIMENS SHALL BE TAKEN BY CONTRACTOR WHERE DIRECTED AND SHALL BE MACHINED BY CONTRACTOR TO DIMENSIONS REQUIRED BY THE RELATED ASTM SPECIFICATION AND/OR AWS STANDARD.

e) CONTINUOUS INSPECTION OF HIGH-TENSILE BOLTING WILL BE PERFORMED. WHERE THE TENSION IN ANY BOLT IS DEEMED TO FALL BELOW THE PROPER VALUE, ALL BOLTS IN THAT CONNECTION SHALL BE EXAMINED.

i) ALL BOLTS WILL BE VISUALLY EXAMINED FOR PROPER TENSION.

ii) ONE-HALF OF ONE PERCENT OF BOLTS WILL BE SELECTED AT RANDOM AND TESTED FOR BOLT TENSION IN ACCORD WITH THE PROVISIONS OF THE *SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS*.

f) CONTINUOUS INSPECTION OF COMPLETE PENETRATION WELDS WILL BE PROVIDED USING ULTRASONIC OR OTHER NON-DESTRUCTIVE TESTS.

i) ULTRASONIC TESTS WILL BE PERFORMED BY SPECIFICALLY TRAINED, QUALIFIED TECHNICIANS, WHO WILL OPERATE THE EQUIPMENT, VISUALLY EXAMINE THE WELDS AND WILL MAINTAIN RECORDS OF WELDS EXAMINED, DEFECTS FOUND AND DISPOSITION OF EACH DEFECT.

ii) INSPECTION INSTRUMENTATION WILL BE CALIBRATED IN ACCORD WITH AWS D1.1.

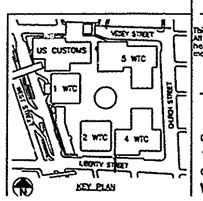
iii) WELDS REQUIRING ULTRASONIC TESTING WILL BE TESTED AT AN INITIAL RATE OF 100% IN ORDER TO AUTHENTICATE THE QUALIFICATIONS OF EACH WELDER AND EACH WELDING OPERATOR. WHERE THE REJECTION RATE IS FOUND TO BE LESS THAN 5% OF THE WELDS TESTED, THE FREQUENCY OF TESTING MAY BE REDUCED TO 25%. WHERE THE RATE OF REJECTION INCREASES TO 5% OR ABOVE, THE INSPECTION RATE WILL AGAIN BE INCREASED TO 100% UNTIL THE DEFECT RATE IS REDUCED TO LESS THAN 5%. PERCENTAGES WILL BE CALCULATED FOR EACH WELDER SEPARATELY.

g) WHERE ULTRASONIC INDICATIONS ARISING FROM THE WELD ROOT CAN BE INTERPRETED AS EITHER A WELD DEFECT OR A BACK-UP BAR, THE BAR SHALL BE REMOVED BY CONTRACTOR AND BACK-WELDED, WHERE REQUIRED. THE WELD WILL THEN BE RETESTED. QUESTIONABLE ROOT INDICATIONS, WHERE NO DEFECT IS FOUND, WILL NOT BE COUNTED AGAINST THE WELDER'S REJECTION RATE.

h) ALL MATERIAL STRESSED TRANSVERSE TO THE GRAIN BY WELDS, LOCATED WITHIN 6 INCHES (150 MM) TO EITHER SIDE OF THE WELD, WILL BE TESTED ULTRASONICALLY FOR LAMINATIONS. TESTING WILL BE IN ACCORD WITH ASTM A578 - LEVEL II STANDARD OF ACCEPTANCE.

i) APPROXIMATELY 25% OF BUTT WELDS ACCOMPLISHED IN THE SHOP WILL BE RETESTED IN THE FIELD. RETESTING WILL NOT TAKE PLACE UNTIL THE WELDS ARE NOT LESS THAN 5 DAYS OLD. SIMILARLY, APPROXIMATELY 25% OF MATERIAL STRESS TRANSVERSED TO THE GRAIN WILL BE RETESTED FOR LAMINAR TEARING.

j) ALL COLUMNS SPLICES AND OTHER COMPRESSION JOINTS THAT DEPEND UPON CONTACT BEARING AFTER ALIGNMENT WILL BE TESTED FOR CONFORMANCE WITH THESE GENERAL NOTES.



THE PORT AUTHORITY OF NY & NJ

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I HEREBY CERTIFY THAT THIS IS A TRUE AND CORRECT COPY OF ONE OF THE CONTRACT DRAWINGS CONSTITUTING A PART OF CONTRACT WTC-945.071 IN THE FORM IN WHICH SAID DRAWINGS EXISTED AT THE TIME THE SAID CONTRACT WAS EXECUTED BY THE PARTIES.

DATE 11/6/98 Sultan A. Adam SPEC WRITER
DATE 11/10/98 P.K. Sweeney ENGINEER OF DESIGN

No.	Date	Revision	Approved
△	11/12/97	ISSUED FOR BID	

Engineering Department Design Divisions

The World Trade Center

STANDBY POWER
5 WORLD TRADE CENTER

STRUCTURAL

GENERAL NOTES

This drawing subject to conditions in contract. All inventions, ideas, designs and methods herein are reserved to Port Authority and may not be used without it's written consent.

MVS	CM	RZ
Designed by	Drawn by	Checked by

Date 11/17/97 Scale

Contract Number WTC-945.071 Drawing Number S0-02